

Table I: Distribution of reported industries (ISIC* revision.2 major division) and occupations (ISCO[†] 1968 edition major group) for cases and controls

	Jobs of cases (N=248)		Jobs of controls (N=209)		Jobs of all subjects (N=457)	
	n	%	n	%	n	%
ISIC* revision.2 major division						
1 Agriculture, hunting, forestry and fishing	27	10.9	16	7.7	43	9.4
2 Mining and quarrying	3	1.2	2	0.9	5	1.1
3 Manufacturing	77	31.1	44	21.0	121	26.5
4 Electricity, gas and water	13	5.3	0	0.0	13	2.8
5 Construction	49	19.8	16	7.7	65	14.2
6 Wholesale and retail trade, restaurants and hotels	14	5.6	24	11.5	38	8.3
7 Transport, storage and communication	12	4.8	24	11.5	36	7.9
8 Financing, insurance, real estate and business services	7	2.8	7	3.3	14	3.1
9 Community, social and personnel services	46	18.5	76	36.4	122	26.7
ISCO [†] 1968 edition major group						
0/1 Professional, technical and related workers	15	6.0	35	16.7	50	10.9
2 Administrative and managerial workers	13	5.2	8	3.8	21	4.6
3 Clerical and related workers	16	6.5	30	14.4	46	10.1
4 Sales workers	10	4.0	20	9.5	30	6.6
5 Service workers	29	11.7	25	12.0	54	11.8
6 Agricultural, animal husbandry and forestry workers, fishermen and hunters	22	8.9	15	7.2	37	8.1
7/8/9 Production and related workers, transport equipment operators and laborers	143	57.7	76	36.4	219	47.9

*ISIC: International standard industrial classification

[†]ISCO: International standard classification of occupations

Table II: Intra-expert agreement between “by job” and “by subject” ratings for job and subject asbestos exposure (first step).

	Weighted kappa coefficient (95% CI)					
	Expert no. 1	Expert no. 2	Expert no. 3	Expert no. 4	Expert no. 5	Expert no. 6
Jobs						
Probability of exposure	0.75 (0.70-0.80)	0.76 (0.71-0.80)	0.69 (0.63-0.74)	0.69 (0.63-0.75)	0.70 (0.64-0.76)	0.75 (0.71-0.80)
Subjects						
Highest probability of exposure	0.79 (0.69-0.88)	0.77 (0.68-0.85)	0.81 (0.73-0.88)	0.74 (0.65-0.83)	0.80 (0.72-0.88)	0.78 (0.70-0.86)
Cumulative exposure index (f/ml-years)	0.76 (0.67-0.86)	0.55 (0.40-0.70)	0.74 (0.64-0.84)	0.67 (0.57-0.77)	0.75 (0.67-0.83)	0.67 (0.52-0.82)

Table III: Probability of asbestos exposure of jobs (N=457) from “by job” and “by subject” ratings by the six-expert panel (first step).

Rating “by subject”		Rating “by job”				Total
		Not exposed	Possible	Probable	Definite	
Not exposed	n	247	20	10	6	283
	% of total	54.1	4.4	2.2	1.3	61.9
Possible	n	6	15	22	0	43
	% of total	1.3	3.3	4.8	0.0	9.4
Probable	n	0	3	9	15	27
	% of total	0.0	0.7	2.0	3.9	5.9
Definite	n	0	0	19	85	104
	% of total	0.0	0.0	4.2	18.6	22.8
Total	n	253	38	60	106	457
	%	55.4	8.3	13.1	23.2	100.0

Table IV: Highest probability of asbestos exposure of subjects (N=100) from “by job” and “by subject” ratings by the six-expert panel (first step).

Rating “by subject”		Rating “by job”				Total
		Not exposed	Possible	Probable	Definite	
Not exposed		31	4	2	0	37
Possible		2	4	5	0	11
Probable		0	2	4	1	7
Definite		0	0	5	40	45
Total		33	10	16	41	100

Table V: Cumulative asbestos exposure index (f/ml-years) of subjects (N=100) from “by job” and “by subject” ratings by the six-expert panel (first step).

Rating “by subject”		Rating “by job”					Total
		Not exposed	>0-0.01	>0.01-0.1	>0.1-1	>1-10	
Not exposed		31	1	3	1	1	37
>0-0.01		0	1	0	0	0	1
>0.01-0.1		0	0	5	1	0	6
>0.1-1		2	0	6	12	3	23
>1-10		0	0	0	6	9	17
>10		0	0	0	1	2	16
Total		33	2	14	21	15	100

Table VI: Agreement between “by job” and “by subject” ratings for jobs and subject asbestos exposure by the six-expert panel and sensitivity and specificity (“by job” rating as the reference method) (first step).

		Computation method	Kappa (95% CI)	Sensitivity	Specificity
Jobs				82.3%	97.6%
Probability of exposure (according to Table III)	Unweighted		0.63 (0.57-0.68)		
	Weighted		0.79 (0.75-0.83)		
Subjects				91.0%	93.9%
Highest probability of exposure (according to Table IV)	Unweighted		0.69 (0.58-0.79)		
	Weighted		0.84 (0.78-0.91)		
Cumulative exposure index (f/ml-years) (according to Table V)	Unweighted		0.62 (0.51-0.74)		
	Weighted		0.80 (0.72-0.88)		

Table VII: Agreement between the six-expert panel and the two internal experts using the “by subject” rating for jobs and subject asbestos exposure and sensitivity and specificity (the six-expert panel as the reference method) (second step).

	Computation method	Kappa (95% CI)	Sensitivity	Specificity
Jobs			86.2%	85.5%
Probability of exposure	Unweighted	0.61 (0.55-0.68)		
	Weighted	0.72 (0.67-0.77)		
Subjects			87.3%	86.5%
Highest probability of exposure	Unweighted	0.58 (0.46-0.71)		
	Weighted	0.71 (0.61-0.81)		
Cumulative exposure index (f/ml-years)	Unweighted	0.37 (0.25-0.48)		
	Weighted	0.68 (0.59-0.77)		

Table VIII: Summary of comparative studies of methods for assessing occupational exposure (range where indicated)

Exposure assessment method	Substances	Kappa (range)	Sensitivity	Specificity
Self-reporting versus industrial hygienist assessment*				
Fritschi et al. (1996)	Asbestos or insulation materials	0.51	0.53	0.93
Rybicki et al. (1997)	Metal		0.61-0.97	0.88-0.97
Bauer et al. (1999)	Chemical agents	0.16-0.45	0.14-0.77	0.59-1.00
Benke et al. (2001)	Chemical agents	0.01-0.48		
Nam et al. (2005)	Asbestos	0.19-0.47		
Job-exposure matrix versus industrial hygienist assessment*				
Stengel et al. (1993)	Organic solvents	0.29-0.45	0.23-0.63	0.87-0.98
Stucker et al. (1993)	Polycyclic aromatic hydrocarbons		0.13-0.96	0.57-0.99
Rybicki et al. (1997)	Metal		0.00-0.21	0.86-0.93
Benke et al. (2001)	Chemical agents	0.07-0.46		
Nam et al. (2005)	Asbestos	0.24-0.34		
Industrial hygienist assessment versus industrial hygiene samples*				
Fritschi et al. (2003)	135 substances		0.86-0.92	
Friesen et al. (2008)	Noise	0.49-0.70		
Intra-expert agreement				
Rybicki et al. (1998)	Metal	0.26-0.57		
Benke et al. (2001)	Chemical agents	0.60-0.71		
Inter-expert agreement				
Rodelsperger et al. (2001)	Asbestos	0.72		
Mannetje et al. (2003)	70 agents	0.45		
Correa et al. (2006)	Lead	0.32		

*reference method